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posteriorly by a quite definite route and rate of extension The ventral moult is completed before the dorsal. This pelage is somewhat longer and coarser, with a distinct color effect dorsally varying from umber to sepia, and due to increased yellow pigment in the intermediate band of the hair.

The young mice were etherized and the hair plucked out over certain areas, without injuring the skin. Where the juvenal hair was removed it was replaced directly by the post-juvenal. The artificial removal of hair modified the normal sequence of appearance of post-juvenal pelage over the body quite definitely. Usually this modification was confined to the regions actually depilated; but not always. It sometimes influenced the succession at a little distance.

A precocious appearance of the post-juvenal pelage may be induced by removing the juvenile hair.

Restoration takes place in removed adult pelage, and occurs irrespective of seasons. It is restored somewhat more rapidly when hair is plucked out than when it is merely cut. Light appears to have no influence in developing the differences of color in dorsal and ventral surfaces.

EXPERIMENTS ON PROTECTIVE COLORATION

Young (Jour. Exp. Zool. May 1916) reports experiments in which crows, hawks, owls, chickens, prairie chickens, grackles, kingbirds and martins are used as preyers, and amphibians, small mammals and insects as prey. The work was done in cages, and varying backgrounds, which contrasted with and concealed the prey were used. He concludes; (1) that protective resemblance is effective in protecting motionless animals from attacks by caged birds; and (2) stillness is probably a more important factor than color in protecting animals from their foes.

COLOR DISCRIMINATION AND ASSOCIATION IN FISHES

White (Jour. Exp. Zool., Feb. 20, 1919) concludes from experiments on mudminnows and stickebacks that they were able to discriminate, in differing degrees, such colors as red and green, and that the discrimination is based on wave length and not upon intensity. Their power of discrimination is less than that of man. Effective associations between certain colors and behavior were shown by their learning to leap out of the water for food announced by various colors. In a similar way associated actions were shown for movement of objects in the water, for movements of the operator, for jarring the vessel in which they were. There was no evidence of ability to discriminate patterns, altho they discriminated the shape of objects, such as a dobson-larva.

Their behavior is stereotyped. The associations are few and simple—such as relate directly to their life struggle. They were able to learn nothing as complex as passing thru a definite opening to secure food. The associations are fairly permanent, lasting as long as 42 days. They are more difficult to modify than to establish at the outset.

AGE AND FERTILITY IN FOWLS

Pearl (Proc. Nat. Acad. Sci., 1917, 3, p. 354) compares the cycle of progress in the fertility of mammals and poultry. In mammals fertility seems to begin below the maximum, increase, and then decline until sterility is reached. In fowls the maximum seems to occur at the first breeding season—when the combined age of the parents at mating is only two years. There is a strong drop from this to the point where the sum of the ages is three years. From three to four there is little change. In passing from this period to a combined parental age of five years there is another large drop.

The same author (Genetics, 1917, 2, p. 417) formulates a fertility index which represents a practical measure of the reproductive value of mated pairs of domestic fowls. This is that percentage of the maximum total number of chicks physiologically possible, which any given mating shows. It includes the total number of chicks produced which are capable of living three weeks after hatching. In the rapid decline in fertility expressed above, the rate of decline is more rapid in the male than in the female.

SEX RATIO IN CHICKENS

Pearl (Science 1917, 46, 220) states that the normal per cent of cockerels is 48.57. It seems that this ratio is correlated with the laying ability of the hens. In hens which have been bred and selecte to a high egg productivity, a still larger proportion of pullets is produced.

NEW PROCESS OF KEEPING FISH BY BRINE FREEZING

Gardiner and Nuttall (Proc. Cambr. Phil. Soc. 1918; 19:185) give an account of a brine freezing process at high temperature which pro-